

1,088,577



PATENT SPECIFICATION

DRAWINGS ATTACHED

1,088,577

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Date of filing Complete Specification (under Section 3. (3) of the Patents Act 1949): Jan. 19, 1966.

Two Applications Dated: Nov. 27, 1964.

Nos. 48270/64, 48271/64.

Complete Specification Published: Oct. 25, 1967.

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Index at acceptance:—F4 W (15, 23, 57)

Int. Cl.:—F 24 c

COMPLETE SPECIFICATION

Improvements relating to Space Heating Apparatus having a Simulated Flame Effect

We, THERMAIR DOMESTIC APPLIANCES LIMITED, of Bridgnorth Road, Wimbourne, Wolverhampton, Staffordshire, a British company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to space heating appliances of the kind adapted for domestic use and essentially comprising a simulated solid fuel open fire, i.e. a panel of glass fibre or other material shaped and possibly coloured to represent a pile of coal or logs and provided with means for simulating the appearance of the light and possibly flame normally associated with such a fire, and also provided with heating means.

Conventional light and flame simulating means comprises an electric light bulb which serves both to illuminate the glass fibre and also provides the heat source for convection currents of air which turn a spinner freely mounted above the bulb so that the shadow of the spinner moves across the device and hence gives the appearance of flickering fire-light.

More recently radiant electric fires have been marketed which utilise a series of ribbons which hang parallel to one another and edge-on to a screen and these ribbons are suspended so as to be freely movable at least at their lower ends by a current of air from a tangential fan. Coloured light is projected i.e. reflected from behind the ribbons so that the latter provide a series of moving shadows on a screen which forms the fire back above the imitation fuel. This gives a more realistic effect but is expensive to produce.

In accordance with the present invention a space heating appliance is provided with a simulated flame effect comprising a plurality of ribbon-like members disposed in the path of air flowing from the exterior of the appliance to a fan heater forming a heating means

of said appliance, said fan heater being located out of sight when the appliance is in normal use and being arranged to deliver heated air to the exterior of the appliance.

Preferably the appliance heats solely by discharging heated air through a grille for example located above the imitation solid fuel and housed in a hood so that to the user there are neither radiant heating bars or air ducts visible. This tends to make the simulated fire effect more realistic in itself: moreover additional improvements in the realism are effected by transmitting light through the ribbons which are preferably but not essentially provided in at least two different colours such as red and yellow so that movement of the ribbons provides a flickering shifting colour pattern on the screen.

The appliance may have a screen fabricated of plastics impregnated with glass fibre (or possibly of cloth or felt) and which may be integral with the fuel effect or separate, and on which the coloured ribbon images are visible. Alternative materials for this screen include plastics and fine wire mesh.

The invention has the advantages of avoiding the cost of a separate fan for moving the ribbon-like elements, also the realism is further increased since the flame effect is due not only to a shifting pattern of colours on the screen but also to a system of moving shadows.

One preferred embodiment of the invention is now described by way of example and with reference to the accompanying drawings, wherein:—

Fig. 1 is a perspective view of a heating appliance;

Fig. 2 is a plan thereof;

Fig. 3 is a section on the line 3—3 of Fig. 2, and

Fig. 4 is a view of a detail.

Referring now to the drawings, the space heating appliance shown comprises a casing e.g. of wood, forming top 10, bottom 11, side

[Price 4s. 6d.]

12 and front 13 panels of an enclosure. The casing is provided with a pattern of bricks 14 or the like which surrounds a central limitation hearth, preferably framed at 15 in metal sections. The back of the casing is closed by a panel 16 of hardboard, asbestos board or the like having a roughened surface which may be metallised or painted to act as a reflector, and provided with air admission holes 17 near its lower edge.

A box-like structure 18 is disposed in the casing and this structure of sheet metal, or Perspex (R.T.M.) or the like preferably reflective material has an open mouth coincident with the hearth framing: the box-like structure includes a fibre-glass moulding 19 shaped and coloured to present a coal or wood fire and the box includes a viewing screen 20, conveniently of translucent fibre glass occupying the space of a dummy chimney opening. The top of the box has a grille 21 for air flow therethrough but this is normally below the line of sight of a person seated or standing in the room having the heating appliance installed in a conventional position therein and is masked from sight by hood 22.

Behind the grille and within the casing supported on shelf 23 is a tangential flow fan-type electric heater 24 (commonly called a "turbo-flow" fan heater) of conventional construction and which is connected to appropriate switches 25 and possibly a thermostat 26 so as to operate either at a predetermined but possibly variable current rating such as 1 kw, 2kw, or 3kw rating, or possibly with overriding thermostatic control: in any event the fan draws in air from the interior of the casing and hence from the room in which the heating appliance is installed (but not necessarily so) via the said air admission holes, and discharges heated air via the said grille.

Secured to the back of the said box-like structure and within the casing is a plurality of ribbons 27 which are preferably of open weave cloth or possibly of a semi-translucent material synthetic fibre cloth such as nylon; as shown they are secured to a lower carrier strip 28, and to an upper carrier strip 29:

conveniently there are several basic shapes and several different colours: the carriers extend across the box-like structure behind the screen.

Below the hearth and within the casing is one or more lamp bulbs 30 of low wattage or of a warm colour (again preferably but not essentially) which when lit illuminate the imitation fuel and give the appearance of a fire. Light is also reflected from the interior face of the back panel of the casing, through the ribbons or the like and upon the screen constituted by the back of the said box.

When the fan is in operation, which may be whenever the bulbs are lit, the ribbons move gently in a stream of air flowing to the fan and coloured light appropriate to the ribbons concerned plays on the said screen. By appropriate arrangement of the parts the simulation of flames may be very realistic.

WHAT I CLAIM IS:—

1. A space heating appliance provided with a simulated flame effect comprising a plurality of ribbon-like members disposed in the path of air flowing from the exterior of the appliance to a fan heater forming a heating means of said appliance, said fan heater being located out of sight when the appliance is in normal use and being arranged to deliver heated air to the exterior of the appliance.

2. An appliance as claimed in Claim 1 wherein the appliance has a simulated hearth, and solid fuel fire effect, and a hood disposed over the imitation chimney opening.

3. An appliance as claimed in Claim 1 or Claim 2, comprising a viewing screen located in front of said ribbon-like members and a reflective material structure disposed behind said members, said fan having an inlet being located immediately above said members.

4. A heating appliance substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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